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Open Letter Regarding Placement of Cell Towers

As a professor who does research on the biological effects of electromagnetic radiation, concerned citizens frequently contact me about the safety of radiation generated by cell phone base stations. “How close is too close?” is a common question. A growing number of municipal governments are considering drafting protocols for the siting of cell towers that including establishing setbacks and exclusions zones that include schools, hospitals and residential areas. Currently, Industry Canada has the final say about where a cellular tower may be placed and, if a conflict exists, they usually side with the cellular provider rather than the community.

Public meetings are required if a new tower is to exceed **15 meters** in height, but if existing towers have more antennas added, or if the antennas are placed on buildings the surrounding community does not need to be notified. New towers that are under 15 meters in height require no notification either and are sometimes constructed in the middle of the night before anyone can object.

If you are a councillor or if you are concerned about a proposed or existing cell phone base station you need to recognize that the existing Safety Code 6 guidelines for radio frequency and microwave radiation—established by Health Canada—are outdated and are much less protective than in many other countries. The guidelines in Russia, China and several European countries are 100 times lower (i.e. more protective) than in Canada and are based on biological effects rather than on changes in body temperature.

Safety Code 6 was established to prevent heating of body tissue. It is based on the intensity of the radiation (power density) averaged over a 6-minute period. Studies from around the world have documented adverse effects of microwave radiation (note: cell phones and cell phone antennas emit microwaves) at levels well below Safety Code 6 guidelines. Long-term cumulative exposure to low levels may be as harmful as short-term exposure to high levels. Consequently someone who lives near one of these antennas may develop health complaints attributable to the radiation over time. Children, the elderly and those who have a compromised immune system and/or a history of cancer in the family are most at risk.

The literature in this area is vast and compelling. Below are a several studies that document the adverse effects of this radiation. Also provided are recommendations from various agencies to have more protective guidelines established for those exposed to continuous radiation and especially for those who have developed a sensitivity to electromagnetic fields.

I. We have **STUDIES documenting the adverse effects** of this radiation.

For example,

1. We have at least 3 studies in Israel, Germany, and Brazil that show an increase in cancer for those who live within 350 to 500 meters of cell phone antennas. None of the exposures exceeded our federal safety code guidelines. Indeed, the highest level documented in the Brazil study (Dode et al. 2011) was 41 microW/cm², which is 4% of Health Canada's Safety Code 6 of 1000 microW/cm².
2. A review of 10 epidemiological studies by Khurana et al. (2010) showed that 8 of the 10 studies documented adverse health effects and all of these were within 500 meters of cell phone antennas. These include 2 of the 3 cancer studies noted above and 6 studies showing neurobehavioral effects. The symptoms are some combination of chronic fatigue, chronic pain, cognitive dysfunction, mood disorders, skin problems, dizziness, nausea, sleep disorders, and tinnitus for those who live within 450 meters of cell phone antennas.

Collectively these symptoms are referred to as *electrohypersensitivity* (EHS) and were previously known as *microwave sickness* and were experienced by military personal working with radar (which also uses microwave radiation).

Epidemiological studies show an associate with an agent (radio frequency radiation) and an outcome (in this case cancer and EHS). They require confirmation with laboratory studies as in item 3 below.

3. We have laboratory studies with rats showing an increase in primary tumors at levels below our federal guidelines (Chou et al. 1992) and demonstrating damage to DNA (Lai and Singh 1995). These studies show cause effect relationship between radiation and cancer/DNA damage.

II. We have **RECOMMENDATIONS for limiting our exposure and for safer guidelines.**

For example,

1. The ECOLOG (2000) review funded by T-Mobile provides the following recommendations:

We recommend the precautionary limit of 0.01 W/m² [10 microW/cm², current HC SC6 value is 1000 microW/cm², so this is 1/100th of Safety Code 6)] independent of the carrier frequency. The rough dependency on frequency with higher limits outside of the resonance range, as it is applied in the concept of SAR, is not justifiable given the results of the scientific studies which conclusively prove non-thermal effects of high frequency fields. Also, the current allowed higher exposures for parts of the body, as long as they refer to the head or thorax are not justifiable.

2. More than 1000 physicians signed the Freiburger Appeal (2002) which states the following [www.feb.se/NEWS/Appell_021019-englisch.pdf]:

*Our therapeutic efforts to restore health are becoming increasingly less effective: the **unimpeded and continuous penetration of radiation into living and working areas . . . causes uninterrupted stress and prevents the patient's thorough recovery.***

In the face of this disquieting development, we feel obliged to inform the public of our observations . . .

*What we experience in the daily reality of our medical practice is anything but hypothetical! We see the **rising number of chronically sick patients** also as the result of an **irresponsible "safety limits policy"**, which fails to take the protection of the public . . . as its criteria for action. Instead, it submits to the dictates of a **technology already long recognized as dangerous**. For us, this is the beginning of a very serious development through which the **health of many people is being threatened**.*

*We will no longer be made to wait upon further unreal research results - which in our experience are often **influenced by the communications industry**, while **evidential studies go on being ignored**. We find it to be of urgent necessity that we act now!*

*Above all, we are, as doctors, the advocates for our patients. In the interest of all those concerned, whose basic right to life and freedom from bodily harm is currently being put at stake, **we appeal to those in the spheres of politics and public health.***

3. Ten years after the Freiburger Appeal little progress has been made and our levels of exposure have increased. So the International Community of Scientists and Doctors are trying again to influence policy based on health concerns. This is what they recommend:

As physicians, we think the following policy steps are urgently needed:

- *Protect the inviolability of the home by lowering exposure levels from internal and external EMF (electromagnetic field) sources*
- *Stop the expansion of wireless technologies and drastically lower exposure limits*

- *Stop the use of continuous wireless transmitters such as cordless phones (DECT), wireless Internet access (Wi-Fi), and wireless meters*
 - *Switch to shielded wired or fiber-optic technologies in homes, preschools, schools, universities, workplaces, hospitals, nursing homes, and public buildings*
 - *Ban the use of cell phones by children below the age of 16*
 - *Attach warning labels on all devices with wireless functions—similar to cigarette packages. Inform the public about the potential risks of wireless technologies and declare radiation on all devices with wireless functions*
 - *Promote biocompatible communication technologies and electricity use*
 - *Identify and clearly mark protected zones for electrohypersensitive people; establish public spaces without wireless access or coverage, especially for public transportation, similar to cigarette smoking*
 - *Provide government funding for industry-independent research that does not dismiss strong scientific and medical indications of potential risks, but rather works to clarify those risks http://www.apdr.info/electrocontaminacion/Documentos/Declaraci3n/International_Doctors_Appeal_2012_Okt-14.pdf*
4. A review of effects from exposure to electromagnetic radiation emitted by cell tower base stations and other antenna arrays (Levitt and Lai 2010) recommends lower guidelines than we currently have in Canada.

In general, the lowest regulatory standards currently in place aim to accomplish a maximum exposure of 0.02 V/m, equal to a power density of 0.0001 $\mu\text{W}/\text{cm}^2$, which is in line with Salzburg, Austria's indoor exposure value for GSM cell base stations. Other precautionary target levels aim for an outdoor cumulative exposure of 0.1 $\mu\text{W}/\text{cm}^2$ for pulsed RF exposures where they affect the general population and an indoor exposure as low as 0.01 $\mu\text{W}/\text{cm}^2$ (Sage and Carpenter 2009). In 2007, The BioInitiative Report, A rationale for a biologically based public exposure standard for electromagnetic fields (ELF and RF), also made this recommendation, based on the precautionary principle (BioInitiative Report 2007).

5. The Standing Committee on Health report (HESA 2010) on the potential health impact of radiofrequency electromagnetic radiation (<http://www.magdahavas.com/house-of-commons-standing-committee-on-health-2/>) made the following recommendations. I am unaware that any of these recommendations have been put in place.
- *The Government of Canada consider providing funding to the Canadian Institutes of Health Research in support of long-term studies examining the potential health impacts of exposure to radiofrequency electromagnetic radiation.*
 - *Health Canada request that the Council of Canadian Academies or another appropriate independent institution conduct an assessment of the Canadian and*

*international scientific literature regarding the potential health impacts of short and long-term exposure to radiofrequency electromagnetic radiation, which would include an examination of **electromagnetic sensitivity** and a comparison of public policies in other countries governing exposure to radiofrequency electromagnetic radiation; and report on its findings.*

- *Health Canada and Industry Canada develop a comprehensive risk awareness program for exposure to radiofrequency electromagnetic radiation, which would include Health Canada making public in an accessible and transparent way all the studies and analyses undertaken by the Department on the impact of radiofrequency electromagnetic radiation on human health, as well as the provision of information promoting the safe use of wireless technologies.*
- *Health Canada and Industry Canada offer to provide information, including awareness sessions on exposure to radiofrequency electromagnetic radiation.*
- *Health Canada ensure that it has a process in place to receive and respond to reports of adverse reactions to electromagnetic radiation emitting devices.*

III. ELECTROHYPERSENSITIVITY (EHS) is recognized by several jurisdictions worldwide. Based on scientific studies about 3% of the population have severe EHS and another 35% have moderate symptoms. In Uxbridge—with a population of 20,600—this comes to approximately 618 with severe symptoms and 7,210 with moderate symptoms. The effects on health care, family resources, and time off work or school can be considerable if these individuals are exposed to radiation within their own homes. For example,

1. In the United States, the U.S. Americans with Disabilities Act recognizes this sensitivity.
2. In Sweden, electrohypersensitivity (EHS) is an officially fully recognized functional impairment (i.e. it is not regarded as a disease). Survey studies show that somewhere between 230,000—290,000 Swedish men and women [~3% of the Swedish population] report a variety of symptoms when being in contact with electromagnetic field (EMF) sources (Johansson 2006).
3. The Canadian Human Rights Commission (Sears 2007) reported that approximately 3% of Canadians have been diagnosed with environmental sensitivities and many more are somewhat sensitive to traces of chemicals and/or electromagnetic phenomena in the environment.

Sears goes on to state: *For people with environmental sensitivities, their health and ability to work rests with the actions of others, including building managers, co-workers and clients. Accommodating people with environmental sensitivities presents an opportunity to improve workplace environmental quality and workers' performance, and may help prevent the onset of sensitivities in others.*

Surely the home environment should be a safe sanctuary but if antennas are placed near homes there is no place for these people to go.

4. Women's College Hospital diagnoses electrohypersensitivity in their environmental sensitivity clinic and have been doing so for years. They currently have a 12 month waiting list.
5. The Parliamentary Assembly Council of Europe (PACE 2011) Resolution 1815 stated the following: Recommendation 8.1.4. *pay particular attention to "electrosensitive" people who suffer from a syndrome of intolerance to electromagnetic fields and introduce special measures to protect them, including the creating of wave-free areas not covered by the wireless network;*
6. The Austrian Medical Association (2012) wrote guidelines for physicians on how to diagnose and treat people with EHS. They stated the following:

There has been a sharp rise in unspecific, often stress-associated health problems that increasingly present physicians with the challenge of complex differential diagnosis. A cause that has been accorded little attention so far is increasing electrosmog exposure at home, at work and during leisure activities, occurring in addition to chronic stress in personal and working life. It correlates with an overall situation of chronic stress that can lead to burnout.

The bottom line is that levels of microwave radiation are increasing and are now at levels that adversely affect human health. The guidelines we have in Canada (Safety Code 6) are outdated and do not protect public health. They provide false assurance to those who have faith in Health Canada. Until the guidelines are changed everyone can hide behind these inadequate guidelines. In the interim it is incumbent on individuals to protect themselves and municipal governments to be responsive to public concerns.

Recommended Websites:

weepinitiative.org (Canada)
www.ertyu.org/steven_nikkel/cancellsites.html (Canadian Cellular Towers Map)
www.magdahavas.com (Canada)
www.slt.co (Canada) (services & products)
www.emrpolicy.org (US)
microwavenews.com (US)
www.antennasearch.com (US Antenna Map)
www.lessemf.com (US) (products)
www.mastsanity.org (UK)
www.powerwatch.org.uk (UK)

Respectfully submitted,
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